










## Organosiloxane/metal oxide coatings

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**Abstract of EP0263428**

An organoalkoxysilane/alumina sol-gel composition and method for its production are disclosed whereby an aluminum alkoxide is hydrolyzed in water to form a sol, to which is added a hydrolyzable organoalkoxysilane of the general formula  $RxSi(OR')^{4-x}$  wherein R is an organic radical, R' is a low molecular weight alkyl radical, and x is at least 1 and less than 4. The composition is dried and cured to form an organosiloxane/alumina monolith or coating on a substrate. An organoalkoxysilane/metal oxide sol-gel composition and method for its production are disclosed whereby an organoalkoxysilane is partially hydrolyzed in organic solution and reacted with alkoxide of the general formula  $M(OR'')^4$  wherein M is aluminum, titanium, zirconium, etc. or mixtures thereof and R'' is a lower alkyl radical. The composition is hydrolyzed, dried and condensed to form an organosiloxane/metal oxide abrasion-resistant coating on a substrate. An ultraviolet radiation resistant coating is disclosed comprising cerium oxide in an inorganic oxide matrix formed by the hydrolysis and condensation of an alkoxysilane and/or other metal alkoxide. A method is disclosed for making an organoalkoxysilane/metal oxide sol-gel composition in an essentially aqueous medium by partially hydrolyzing an organoalkoxysilane with a limited amount of water which is essentially completely consumed in the hydrolysis reaction, adding a metal alkoxide of titanium or zirconium to the essentially anhydrous partially hydrolyzed organoalkoxysilane, completely reacting the metal alkoxide with the partially hydrolyzed organoalkoxysilane to form an oxide network and then completely hydrolyzing the composition in water. A method of removing residual organic material from inorganic polymers prepared from alkoxides by a sol-gel process is disclosed, wherein the dried gel is treated with aqueous fluid to effect solid-state hydrolysis of residual alkoxy groups. Organic-inorganic hybrid polymers and a method of making them by reaction of organic monomers with organofunctional alkoxysilanes are disclosed. A composition and method are disclosed for forming an oxide film containing silicon and tin on a substrate surface involving a composition comprising a partially hydrolyzed alkoxysilane and an organotin compound, and thermal reaction thereof.

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